Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. For the following elementary reactions, state whether they are unimolecular, bimolecular, or

termolecular.

a) (CH3)3CBr(aq) + H2O(l) → (CH3)3COH(aq) + H+(aq) + Br-(aq)

b) Molecular Bromine breaks apart when UV light is shown on it to produce to bromine ions.

c) H2(g) + 1/2O2(g) → H2O(l)

2. H2(g) + 2ICl(g) → I2(g) + 2HCl(g)

Experimental rate

Rate = k[H2][ICl]

Proposed Mechanism

(1) Slow: H2 + ICl → HI + HCl

\_\_(2) Fast: HI + ICl → I2 + HCl\_\_\_

Overall: H2 + 2ICl → I2 + 2 HCl

Determine if the proposed mechanism is reasonable.

3. NO2(g) + F2(g) → NO2F(g)

Experimental rate

Rate = k[NO2][F2]

Proposed Mechanism

(1) (slow) NO2(g) + F2(g) → NO2F(g) + F(g)

(2) (fast) NO2(g) + F(g) → NO2F(g)\_\_\_\_\_\_\_\_\_\_

Overall: NO2(g) + F2(g) → NO2F(g)

Determine if the proposed mechanism is reasonable.